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ABSTRACT

An analysis of health care in Venezuela indicates that if the health of the Venezuelan population is to be maintained and improved then there must be undertaken a major effort to develop continuing educational programs for physicians. Venezuelan undergraduate medical education is largely didactic, with little exposure to patient care; specialization is not rigorously monitored, and continuing education is sporadic and voluntary. It is recommended that an advisory committee appoint an administrative staff to: 1) oversee the construction of comprehensive residency programs; and 2) develop a continuing education program for physicians. This latter program would consist of the following: a dial access library, a cassette tape exchange, visiting professorships, inservice courses, radio conferences, films, upgrading of hospital libraries, tape/slide programs, consultation, and therapeutic criteria reviews. These continuing education efforts should be learner oriented, brief, and pertinent. Continuing education for allied health care personnel should parallel that for physicians. (PB)

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Report on the Continuing Education of Health Professionals and Graduate Medical Education in Venezuela

Prepared by Thomas C. Meyer,
M.B., B.Ch., M.R.C.P.
April 20, 1970

This report is the result of a visit to Caracas, Venezuela April 13-18th, 1970 under the sponsorship of the Ministry of Health and Welfare and of Asociación La Trinidad. During the visit I consulted with various individuals and groups (see Appendix I) to whom I am grateful for giving up their time to orient, educate and advise me. In addition various texts were studied (see Appendix II) and certain opinions formed which lead me to the following conclusions concerning the graduate and continuing education of physicians in Venezuela. In general, the allied health professional education parallels that of physicians but no attempt was made on this occasion to ascertain what provisions there are for the continuing education of allied health professions.

CONCLUSION: If the health of the citizens of Venezuela is to be maintained and significantly improved there is a monumental task in the development of graduate and continuing education programs for health professionals of all types. These programs should be continuous, continuing and designed to meet the needs of many types of learners in all of the health professions.

Background

1) Undergraduate Medical Education is largely didactic with comparatively little active participation by the students and very little responsibility for patient care in the students hands. The curriculum is locked with little opportunity for elective study. The Medical student is given a broadly based exposure suitable for general practice. Approximately 40 % of entering medical students graduate at the end of the six year training course.

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2) Internships are not mandatory but there are elective two-year rotating internships at certain hospitals.

3) Residencies in specialties are available in some hospitals and usually run for two or more years.

4) Specialization is not by examination after the completion of certain pre-requisites. Rather it is by a physician limiting his practice to a specialty after a period of advanced study in that specialty in Venezuela or in some other country.

5) There are graduate courses (in approximately 10 specialties) with examination in some of them at the end of two years. A diploma is awarded by the University.

6) Continuing medical education is voluntary, sporadic, usually episodic and built around three main types:

a) Journals:
- (i) Acta Medica Venezolana published six times a year.
- (ii) Medical Tribune published weekly by a private group.
- (iii) Other Venezuelan Medical Journals of restricted circulation.

These are delivered to the majority of physicians in the country. Most of the physicians subscribe to one or more of the specialized journals from Venezuela, Spain, France, United Kingdom or United States.

b) Meetings
- (i) The Academy of Medicine of Venezuela holds a congress lasting 2-3 days every 5 years.
- (ii) Every specialty holds specialty meetings every 1-3 years.
- (iii) Ministry of Health holds regional meetings for staff on a regular basis. These are usually directed towards Preventive Medicine and are not open to physicians in private practice.

(iv) Local medical societies hold meetings approximately once a month in the evening. These may or may not have a scientific program.

c) Courses - Irregular courses are held for their membership by the specialty societies and ocaasionally by University.

(7) Health care responsibility is divided. There are hospitals run by Social Security, the Ministry of Public Health, State and municipal districts. There are health care centers run by the same agencies. The hospitals and health care centers derive their medical coverage from full and part-time physicians but all physicians have a private practice which may vary in size depending upon the amount of their time employed by one or more of the above agencies. It is estimated that 85% of the population of Venezuela are cared for in part or whole under these systems. Private practice accounts for the remaining 15% of the population who are hospitalized in private hospitals of 20-60 beds.

(8) There appears to be very little awareness in government, university, the professions and the public of the rapidity with which obsolescence becomes a significant factor in a rapidly evolving discipline such as medicine. The medical profession with whom I had contact was quick to appreciate the role of continuing education in the prevention of obsolescence when this fact is brought to their attention.

For the purposes of this report continuing education and graduate education are dealt with separately but should evolve in parallel.

I. An approach to the continuing education of the health professionals.

Several beliefs of this observer should be recorded because the recommendations should be viewed in the perspective of these beliefs:

(1) Adult education (i.e. voluntary, non-credit education) must be essentially oriented to the learner. People learn in different ways and an institution which provides adult education should design the educational programs to suit the capabilities of the learner. The educational experience should be brief, concentrated and presented in such a way that it is recognizable to the adult learner as a real-life situation. He should be able to bring his fund of knowledge, experience and judgement into the learning experience. The learner should, if possible, be an active participant in the learning experience.

(2) Adult continuing education must compete with many other elements for the time and energy of the learner. Since there is little tangible benefit for the learner other than the sense of achievement and the ability "to do a better job," continuing education should be interesting, pertinent, brief and relevant to the learner's needs.

(3) Continuing education is more effective when available in small amounts, frequently and in various and diverse modalities.

(4) There is no better methods of adult education than the single learner--single teacher--single problem approach where there can be free exchange of ideas and information. This preceptorial experience is rarely possible but should always be remembered by those designing a comprehensive program.

(5) The learners, or a representative sample of the learners, should always be given a significant role in the design of any educational exercise. They should be consulted as to course content, mode of delivery, timing and evaluation of each and every educational exercise.

(6) Evaluation is an integral and indispensible part of any educational plan. Without evaluation and feedback into the system there will be little improvement. Unless an educational plan improves it will perish.

(7) Adult education has definable constraints within which it must work. For the health professions the usual constraints are lack of time, energy and motivation. Economic considerations are important constraints though it is more frequently loss of earnings for the duration of the educational experience rather than the cost of the education which is the deterring factor.

There are intangible constraints within each community--large or small--which should be recognized early if possible. These usually relate to local customs, culture, opinion, geographic location and societal values.

(8) Health care is a team function. Every member of the health team has an equal right to exposure to continuing education and efforts should be directed to every branch of the health team within their own perceived needs.

In view of the preceding beliefs it is not possible for me to set priorities for any one group of learners. Therefore the following list is submitted as possible programs that could be introduced in Venezuela. The determination of priorities and the introduction of other programs is logically done by those who have greater background in the needs of the health professionals in Venezuela than this observer.

I have, however, placed the programs in the order that I would attempt to introduce them in the hope of producing the most far-reaching effects as early as possible. It must be stressed, however, that the determination of priorities should be done in Caracas, not by anyone in Wisconsin or anywhere else.

1) Dial Access library for physicians - nurses should follow and then other health professions.

2) Round-robin cassette tape exchange - for small select groups.

3) Visiting professorships - circuit courses.

4) On campus courses.

5) Two-way radio conferences.

6) Postgraduate preceptorships.

7) Single Concept films.

8) Upgrading of hospital libraries.

9) Therapeutic Criteria review.

10) Hospital equipment and procedure consultation.

11) Tape-slide program sales.

Appendix III is an attempt at a time-schedule of implementation for these programs. It must be modified by those who have greater background in Venezuelan problems than I have.

Recommendations: In order to achieve any cohesiveness in these programs it seems to me that there are several key appointments necessary.

1) A broadly based Voluntary Advisory Committee which should set priorities, be the search committee for the administrator and physician, direct the operations and receive accounting from the members of La Trinidad involved in the program. The composition of the committee is dependent upon the health professions to be served and should comprise a majority of the recipients of the educational exercises.

Regional sub-committees may be in order. They will surely be most helpful in many ways.

2) Administrator - whose full time occupation is the development of these programs. I would be pleased to furnish the items that are necessary and desirable in his background and job description. He ought to be recruited early, given a training program of approximately one month in the U.S.A. and take an active part in planning.

3) Physician - at least 1/4 time for medical direction and coordination. He should be compatible with the administrator and should have the same training program.

4) There should be secretarial support and a budget separate from the budget for each project.

II. An Approach to the graduate education of Physicians in Venezuela.

The graduate education of physicians is a complex, time consuming task which has evolved over many years in the U.S.A. However, it is simplified in the U.S.A. insofar as the objective of the residency program is to prepare physicians for specialization as measured by the National Board Examination. This examination essentially sets the standards of residency. Having no specialty boards in Venezuela it seems to me that any group wishing to move into a residency program must decide upon the objectives of the residency program.

Objectives: 1) What types of residencies are going to be offered? Presumably national priorities together with available manpower to teach will be the main determining factor.

2) What concepts and what skills will each man possess at the completion of his residency?

3) What level of expertise in both concepts and skills will he be expected to have?

These factors, together with the composition of patient population will determine the mechanics of the program for graduate education. It is my belief that when these objectives have been identified (see Appendix IV) the design of the program will become a mechanical but very time consuming process. Further consultation will be required to determine the number of patients usually required to train graduate students at the first year level, at the second year level and at the third year level in order to attain the objectives which can only be set by those having long experience in the delivery of care in each of the specialities in Venezuela.

Again I would stress that the educational objectives can only be set by those who have practiced their specialities in Venezuela. Outside consultation may be helpful in design and implementation but these are mainly administrative functions.

Conclusion: If the health of the citizens of Venezuela is to be maintained and significantly improved there is a monumental task in the

development of graduate and continuing education programs for health professionals of all types. These programs should be continuous, continuing and designed to meet the needs of many types of learners in all of the health professions.

These are time-consuming and very costly initial and continuing projects and require dedication of funds, people and space in which these programs can evolve and mature. I have confidence that ventures such as these can be accomplished in Caracas with the guidance and leadership of the La Trinidad group. Great patience and tenacity of purpose is a prerequisite for the development of these programs but the specter of obsolescence of the health professions in every country is an ever-present stimulus to those involved in this work.

Budget Summary in U.S. Dollars

for implementation in the U.S.
(This has not been adjusted for differences in salaries, cost of living, etc., in Venezuela.)

		1970-71	1971-72	1972-73
1.	Core Staff Budget	52,500	53,000	59,000
2.	Dial Access Library	9,500	9,000	9,000
3.	Cassette Tape Exchange	2,500	2,000	2,000
4.	Visiting Professor	6,250	10,250	10,250
5.	On Campus Courses	4,250	8,550	8,550
6.	Two-Way Radio Conferences	2,200	16,500	29,000
7.	Postgraduate Preceptorships	2,050	2,050	2,050
8.	Single Concept Films*			
9.	Hospital Libraries	7,500	3,500	3,500
10.	Theraputic Criteria Review	10,125	24,250	24,250
11.	Hospital Review*			
		96,875	129,100	147,600
	7% annual salary increase		4,450	5,500
	Total	96,875	133,550	153,100

* not budgeted

Note: The above budget summary and the detailed budgets on the following pages are based on the best estimates that can be made in terms of experience with similar projects at the University of Wisconsin.

They are intended to give a general idea of the financial committemnt being made in following the time schedule set forth in Appendix III.

United States Dollars

	1970-71	1971-72	1972-73
1. Core Staff Budget			
Administrator	15,000	15,000	15,000
Physician (Part Time)	8,000	8,000	8,000
Evaluation Specialist	15,000	15,000	15,000
Secretary	5,000	10,000	15,000
Equipment	1,500	500	500
Supplies	2,000	2,000	2,500
Travel	6,000	2,000	2,000
Sub-total	52,500	53,000	59,000
2. Dial Access Library			
Coordinator (Part-Time)	2,000	2,000	2,000
Project Assistant (Part-Time)	1,250	1,250	1,250
Equipment	750	250	250
Supplies	4,400	1,500	1,500
Telephone	100	2,000	2,000
Evaluation	1,000	2,000	2,000
Sub-total	9,500	9,000	9,000
3. Cassette Tape Exchange			
Project Assistant (Part-Time)	1,250	1,250	1,250
Supplies	1,250	750	750
Sub-total	2,500	2,000	2,000
4. Visiting Professor-Circuit Courses			
Project Assistant (Part-Time)	1,250	1,250	1,250
Honoraria ($400/course)	1,200	2,400	2,400
Supplies	300	600	600
Travel ($1,000/course)	3,000	6,000	6,000
Evaluation	500	1,000	1,000
Sub-total	6,250	11,250	11,250
5. On Campus Courses			
Project Assistant	1,250	1,250	1,250
Honoraria	500	1,500	1,500
Supplies	200	600	600
Travel	1,000	3,000	3,000
Promotion	800	1,200	1,200
Evaluation	500	1,000	1,000
Sub-total	9,250	8,550	8,550

Note: An additional $500 - $1,000 should be budgeted for each conference to cover cost of food, which may be recovered from a registration fee.

6. Two-Way Radio Conferences			
Coordinator	2,000	2,000	2,000
Project Assistant	0	2,500	5,000
Equipment	0	2,000	2,000
Supplies	200	5,000	10,000

	1970-71	1971-72	1972-73
Publicity	0	1,000	2,000
Recording Services	0	2,000	4,000
Evaluation	0	2,000	4,000
Sub-total	2,200	16,500	29,000

7. Postgraduate Preceptorships

Project Assistant	1,250	1,250	1,250
Publicity	300	300	300
Evaluation	500	500	500
Sub-total	2,050	2,050	2.050

8. Single Concept Films

This project cannot be budgeted without more specific information as to what is available in Venezuela in terms of projectors and whether Spanish translation would be acceptable. At the University of Wisconsin film projection costs between $300-$500 per minute if we make the film ourselves. Commercial projection is generally $1,000 per minute. If we adapt an existing film, it costs approximately $100-$150 per minute.

9. Hospital Libraries

Coordinator	1,000	1,000	1,000
Project Assistant	5,000	0	0
Supplies	1,000	1,000	1,000
Travel	0	1,000	1,000
Evaluation	500	500	500
Sub-total	7,500	3,500	3,500

10. Therapeutic Criteria Review

Physician (Part-time)	7,500	15,000	15,000
Project Assistant	625	1,250	1,250
Supplies	500	1,000	1,000
Travel	1,000	5,000	5,000
Evaluation	500	2,000	2,000
Sub-total	10,125	24,250	24,250

11. Hospital Review

Cannot be budgeted at this time.

Appendix I

Individuals and Groups Interviewed During the Visit

1. Asociacion Civil Centro Medico Docente La Trinidad

   Dr. Pablo A. Pulido, M. -- Executive Secretary

   Dr. Francisco Kerdel Vegas
   Dr. Alberto Guinand Baldo (Doctors, members of the group)
   Dr. Edgar Chiossone Lares

   Mr. George Bocaranda -- Assistant to the Executive Secretary

2. Ministry of Public Health

   Dr. Lisandro Latuff -- Minister of Public Health

   Dr. Rogelio Valladares -- General Director of the Ministry

   Dr. Daniel Orellana and
   Dr. Carlos Luis Gonzales, Office of International Afffairs of the Ministry of Health

3. Pan American Health Organization in Venezuela.

   Dr. Edgar Munoz -- Officer

4. Ford Foundation

   Dr. John de Abate -- Head of the Venezuelan Office and Assistant to the Executive Secretary of Universidad Metropolitana, (New Private University)

5. Central University of Venezuela

   Dr. David Loya -- Assistant Dean, School of Medicine

   Dr. Pedro Armas -- Chairman of the Committee of Post-graduate Education

6. Ministry of Education
   Dr. Hector Hernandez Carbana -- Minister of Education

7. Venezuelan Institute for Research (IVIC)
   Dr. Miguel Layrisse -- Head of Department of Physiopathology

8. Conferences

National Academy of Medicine and La Trinidad Medical Group

Appendix II

1) Medical Care in Developing Countries. Maurice King. Oxford University Press, 1966.

2) Behavioral Science and Medical Education in Latin America. The Millbank Memorial Fund Quarterly Vol. XLIV, 2 April 1966, Part 2.

3) Demography and Public Health in Latin America. The Millbank Memorial Fund Quarterly Vol. XLII, 2 April 1966, Part 2.

4) A report to the Catholic University "Andres Bello" by Dr. Thomas Hunter, Eduardo Faraco, Octavio Mangrut (Aug. 1964).

5) Memorandum on the Project of a Teaching Medical Center and a Faculty of Medicine in Caracas, Venezuela (Oct. 1966).

6) Report to the Rockefeller Foundation rendered by Drs. Robert F. Loeb and Jose Felix Patino related to the project of creating a teaching medical center in Caracas, Venezuela (Dec. 1966).

7) Recommendations with regard to the Future Dévelopment of the Universidad Central de Venezuela Facultad de Medicina, Caracas, Venezuela by H. Houston Merrit, M.D. (July, 1961).

8) Highlights in the Growth of Universidad Catolica Andres Bello, 1953-1960. Henry Gomez (1966).

9) Report on opportunities for a cooperative research program on diseases endemic in Guayana Region. Donald Heyneman, Ph.D. (December, 1969).

10) Memorandum from Mr. Minor Vandermode Jr. to Dr. Pablo Pulido. August, 17, 1968.

11) Falleto Informativo para aspirantes a ingresar a la Facultad - Universidad Central de Venezuela. No 1/1969.

12) Aide-Memoire on Visit to Caracas - Dr. G.E.W. Wolstenholme. (Jan. 1969).

13) Folleto Informativo, Facultad de Medicina, Escuela de Salud Publica, Curso de Postgrado de Medicina Interna. Aug. 1959.

14) Especialistas y medicos generales en Venezuela 1961 and 1966. Data obtained from the Venezuela Association of Medical Schools.

15) Health and the Developing World. John Bryant, M.D. Cornell University Press. Ithaca and London, 1969.

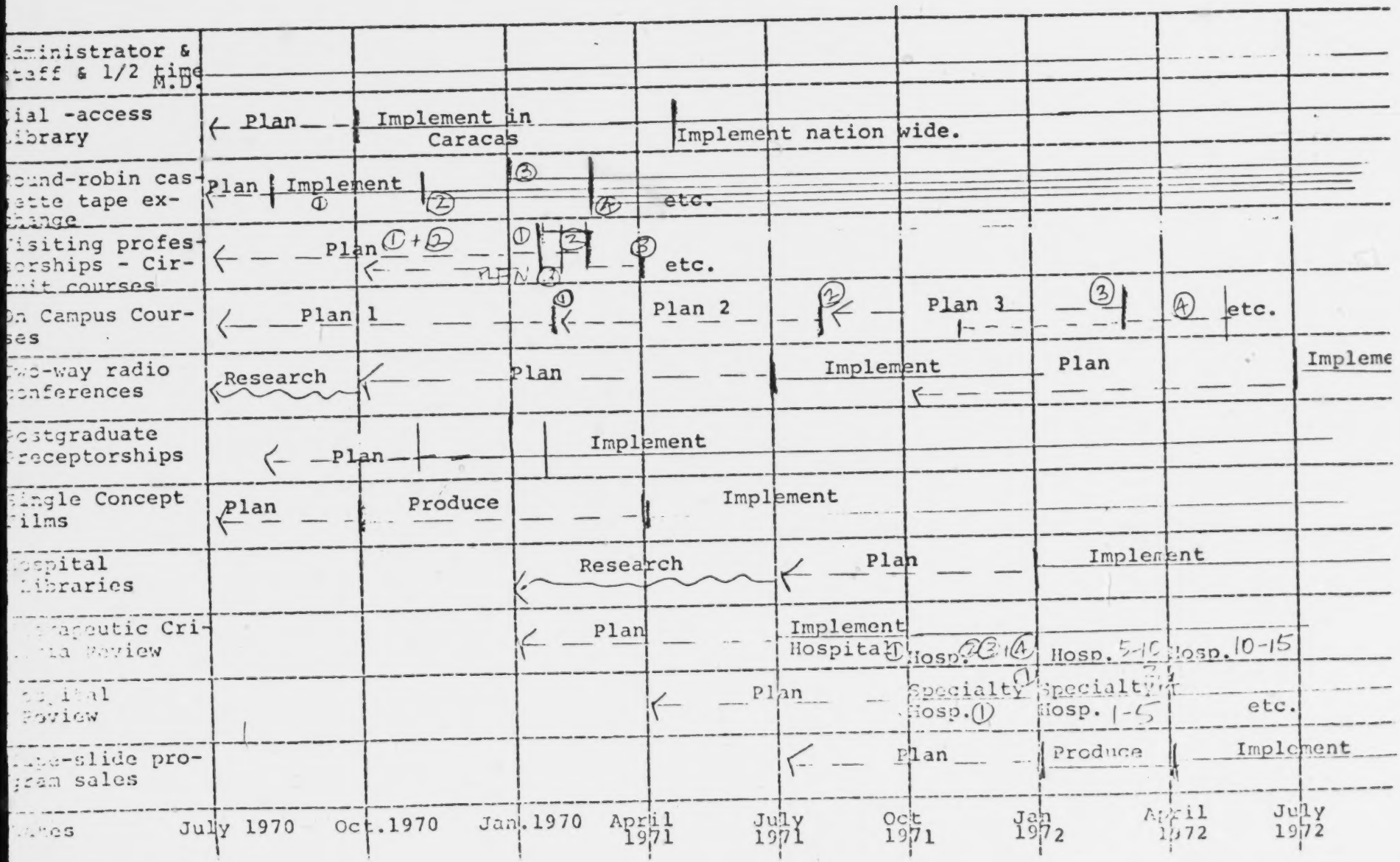
16) The Impact of University Social Structure on Student Alienation - A Venezuelan Study. Robert F. Arnove, Stanford School of International Studies, 1969.

17) "Master Plan La Trinidad," Bertrand Goldberg Associates and Asociasion Civil Centro Medico Docente La Trinidad, Chicago, Illinois, and Caracas, 1970.

Appendix III

Suggested Chart for Continuing Education of Health Professions in Venezuela

April, 1970



Appendix IV.

These are examples of Educational Objectives which have been completed for 1) Pediatric Cardiology Residency

2) Clinical Cardiology Fellowship.

There are differences in the Degrees of Expertise as well as the Diseases.

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CLINICAL CARDIOLOGY FELLOWSHIP

At the completion of a two year University of Wisconsin Clinical Cardiology Fellowship the fellow will have had the opportunity to acquire the following concepts and skills as spelled out below.

DEFINITIONS:

1) Concept - Is the ability to diagnose, understand the basic mechanisms of the diseases listed and treat them logically.

2) Skill - Is the ability to properly order, perform, and interpret specific technical procedures with the degrees of expertise assigned.

Degrees of Expertise

Degree Expertise	Concept	Skill
A) Highly Competent	Posses detailed knowledge of the patho-physiology and is able to diagnose and manage 95% of cases recognizing that consultation may be required.	Able to recognize need for, perform and interpret procedure without consultation in 95% of cases.
B) Competent	Posseses general knowledge of patho-physiology and is able to maintain primary responsibility for 90% of these cases with consultation help.	Able to recognize need for, and complications of this procedure, but needs consultation to have it performed and/or interpreted.
C) Awareness	Aware of the diagnostic entity but is dependent upon consultative help for diagnosis and management.	Aware that procedure exists but needs consultation to determine need for, performance and interpretation of the procedure.

CONCEPTS

A. Highly Competent

1. Acute Rheumatic Fever and active carditis
2. Chronic Rheumatic Valvular and myocardial Disease
3. Non-rheumatic myocarditis and myocardiopathies including Chronic alchoholism
4. Acute bacterial endocarditis
5. Subacute bacterial endocarditis
6. Heart in acute nephritis
7. Pericarditis and pericardial effusion
8. Constrictive pericarditis
9. Syphlitic aortitis and aneurysms
10. Ischemic heart disease
    a. Angina pectoris
    b. Acute coronary insufficiency
    c. Myocardial infarction and complications
11. Hypertension
    a. Essential
    b. Secondary
12. Hypertensive heart disease
13. Pulmonary embolism
14. Secondary pulmonary hypertension
15. Cor pulmonale
16. Thyrotoxic heart disease
17. Myxedematous heart disease
18. The heart in anemia
19. The heart in pregnancy
20. Dissecting aneurysm
21. Psychosomatic cardiovascular disturbances
22. Coarctation of aorta
23. Isolated aortic stenosis with or without calcium deposition
24. Atrial septal defect
25. Atrioventricular septal defects
26. Ventricular septal defects
27. Patent ductus arteriosus
28. Eisenmengers syndrome
29. Pulmonary stenosis with normal aortic root
30. Tetralogy of Fallot
31. Thrombophlebitis
32. Systemic arterial embolization
33. Obstruction of the distal aorta
34. Innocent murmurs
35. Peripheral vascular disease

B. Competent

1. Non-rheumatic Myocarditis and Myocardiopathies

    a. Heart in other infections
        (i) Meningococcal
        (ii) Pneumonia
        (iii) Tuberculosis
        (iv) Virus infections

b. Rheumatoid arthritis
c. Periarteritis nodosa
d. Disseminated Lupus erythematosus
e. Malnutrition
f. Radiation effects
g. Secondary tumors of the heart
h. Carcinoid

2. Pulmonary hypertension - Primary
3. Arteriovenous fistula - Pulmonary and systemic
4. Effects of indirect injury to heart
5. Effects of direct injury to heart
6. Dextrocardia
7. Familial cardiomegaly
8. Friedrich's ataxia
9. Congenital heart block
10. Congenital aortic stenosis
11. Anomalous coronary arteries
12. Congenital aortic insufficiency
13. Congenital mitral insufficiency
14. Ebstein's disease
15. Vascular tracheo-oesophageal compression
16. Subaortic muscular obstruction of left ventricle

C. Awareness

1. Non-rheumatic myocarditis and myocardiopathies
   a. Parasitic myocarditis
      (i) Chagas Disease
      (ii) Trichiniasis
      (iii) Schistosomiasis
      (iv) Filiariasis
      (v) Hydatid
   b. Myocarditis due to fungi and yeasts
      (i) Coccidio-mycosis
      (ii) Histoplasmosis
      (iii) Cryptococcus
      (iv) Actinomycosis
   c. Endomyocardial fibrosis
   d. Sarcoidosis
   e. Primary amyloidosis
   f. Hemachromatosis
   g. Primary sarcoma
   h. Fibroma
   i. Leukemia
   j. Diptheritic myocarditis
2. Fibroelastosis
3. Hurler's syndrome
4. Muscular dystrophy
5. Aortic hypoplasia
6. Aortic atresia
7. Supravalvular aortic stenosis
8. Supravalvular mitral stenosis (cor triatriatum)
9. Subvalvular aortic stenosis
10. Congenital mitral stenosis
11. Congenital mitral insufficiency
12. Double-outlet right ventricle

13. Pulmonary atresia
14. Absent right or left pulmonary artery
15. Tricuspid atresia
16. Complete transposition of the great vessels
17. Persistent truncus arteriosus
18. Total anomalous pulmonary venous drainage
19. Anomalous systemic venous drainage
20. Common ventricle
21. Cor biloculare
22. Post-partum myocardiopathy
23. Myocoma of left atrium
24. Heart and circulation in Beri-beri
25. Ruptured sinus of valsalva
26. Idiopathic hypertrophy
27. Glycogen storage disease

SKILLS

A. Highly competent

1. Electrocardiography
2. Ability to perform adequate cardiopulmonary resuscitation
3. Electro-conversion
4. Central venous pressure catheter placement
5. Cardiac pacing
6. Venous pressure measurment
7. Phonocardioraphy

B. Competent

1. Fundoscopy
2. Vectorcardiography
3. Pericardiocentesis
4. Cardiac catheterisation and angiography
5. Coronary angiography
6. Selective peripheral angiography
7. Renal function tests
8. Respiratory function tests

C. Awareness

1. Ballistocardiography
2. Echo-cardiography
3. Plethysmography
4. Phono catheterisation
5. Kineto-cardiography

PEDIATRIC RESIDENCY

DEFINITIONS:

1) **Concept** - Is the ability to diagnose, understand the basic mechanisms of diseases and treat them logically.

2) **Skill** - Ability to properly order, perform and interpret specific technical procedures.

Degrees of Expertise

	Concept	Skill
A)	Highly Competent - Posseses detailed knowledge of the patho-physiology and is able to diagnose and manage 90% of cases recognizing that consultation may be required.	Able to recognize need for, perform and interpret procedure without consultation in 90% of cases.
B)	Competent - Possesses general knowledge of patho-physiology and is able to maintain primary responsibility for 90% of these cases with consultation help.	Able to recognize need for, and complications of this procedure, but needs consultation to have it performed and/or interpreted.
C)	Awareness - Aware of the diagnostic entity but is dependent upon consultative help for diagnosis and management.	Aware that procedure exists but needs consultation to determine need for, performance and interpretation of the procedure.

OBJECTIVES OF A PEDIATRIC CARDIOLOGY RESIDENCY

(Levy, Rowe, Ledbetter, Meyer)

A) CARDIOLOGY

1. CONCEPTS-

a. Highly Competent

1. Acute Rheumatic Fever
2. Bacterial Endocarditis
3. Recognition of Purulent Pericarditis and Pericardial Effusion
4. Congestive Heart Failure
5. Recognition of complications of Cyanotic C.H.D.
6. Variants of normal cardiovascular findings

b. Competent

1. Atrial Septal Defect
2. Ventricular Septal Defect
3. P. D. A.
4. Congenital Obstruction of L. V. Outflow
5. Coarctation of Aorta
6. Tetraology of Fallot
7. Obstruction of R. V. Outflow
8. Myocarditis
9. Transposition of the Great Vessels
10. Endocardial Fibroelastosis
11. Chronic Rheumatic Carditis
12. Acute Benign (Idiopathic) Pericarditis
13. Pulmonary Hypertension
14. Heart Disease Secondary to Lung Disease
15. Systemic Hypertension
16. Arrhythmias and Heart Block

c. Awareness of:

1. Anomalies of Aortic Arch Syndromes
2. Ebstein's Disease
3. Tricuspid Atresia
4. Corrected Transposition of Great Vessels
5. Common Ventricle
6. Malposition of the Heart
7. Truncus Arteriosus
8. Ventricular Hypoplasia
9. Anomalous Venous Connections - Pulmonary and Systemic
10. Arteriovenous Fistulas
11. Abnormalities and Diseases of Coronary Vessels
12. Constrictive Pericarditis

c. Awareness of: (Contd)
   13. S. L. E.
   14. Polyarteritis Nodosa
   15. Glycogen Storage Disease
   16. Friedrich's Ataxia
   17. Progressive Muscular Dystrophy
   18. Rheumatoid Arthritis
   19. Marfan's Syndrome
   20. Cardiac Tumors - Primary and Secondary
   21. Pre-operative Precautions
   22. Post-hospital Operative Complications
   23. Post-perfusion Syndrome
   24. Waring Blender Syndrome

2. SKILLS

a. Highly Competent
   1. Adequate Cardiac Resuscitation
   2. Central Venous Pressure Catheter Placement and Maintenance

b. Competent
   1. Electrocardiography and Vectorcardiography
   2. Cardioversion
   3. Pericardiocentesis
   4. Cardiac Catheterisation and Selective Angiography

c. Awareness of:
   1. Cardiac Pacing
   2. Echo-Cardiography
   3. Phonocardiography

DISCUSSED AND OMITTED TITLES

A) CARDIOLOGY

1. CONCEPTS

Pulmonary Atresia with Intact Septum
Congenital Absence of Pulmonary Valve
Tricuspid Stenosis and Insufficiency
Double Outlet Right Ventricle
Tuberculous Pericarditis
Diphtheritic Heart Disease
Fungal and Protozoal Diseases
(Histoplasmosis and Toxcoplasmosis)
Parasitic Diseases
Hyperthyroidism
Hypothyroidism
Beri-beri
Kwashiorkor
Cardiomyopathies of Tropics
Hurler's Syndrome
Amyloidosis

2. SKILLS

Peritoneal Dialysis
Lymphangiography
Phono-Catheterisation